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Your Reference: GBP86575
Application No: GB 0222410.3

**The Patent Office
Patents Directorate**

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10 February 2003

Dear Sirs

**Patents Act 1977:
Combined Search and Examination Report under Sections 17 and 18(3)**

Latest date for reply: 27 September 2004

I enclose two copies of my search and examination report and two copies of the citations.

By the above date you should either file amendments to meet the objections in the report or make observations on them. If you do not, the application may be refused.

Publication

I estimate that, provided you have met all formal requirements, preparations for publication of your application will be completed soon after **17 February 2004**. You will then receive a letter informing you of completion and telling you the publication number and date of publication.

Amendment/withdrawal

If you wish to file amended claims for inclusion with the published application, or to withdraw the application to prevent publication, you must do so before the preparations for

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Application No: GB 0222410.3

Page 2

10 February 2003

publication are completed. **No reminder will be issued.** If you write to the Office less than 3 weeks before the above completion date, please mark your letter prominently: "**URGENT - PUBLICATION IMMINENT**".

Yours faithfully

Steven Davies
Examiner

Important information about combined search and examination

I also ask that you take note of the following points. These might have a bearing on the future stages of your application because the examination report has been sent to you before your application has been published.

- (a) You may file voluntary amendments before making a full response to my examination report. We will publish with your application any new or amended claims you file voluntarily or as a full response, provided that they are received before preparations for publication are completed. It would help us when you file amendments before publication if you could prominently indicate in a covering letter whether or not the amendments are intended as a full response to the examination report.
- (b) If you file a full response to the examination report before your application is published I will consider it as soon as possible. However, if this would disrupt the publication of your application, I would have to delay taking any action until the application had been published. This delay could be up to 3 months, depending upon when we receive your response.
- (c) There is another situation when there might be a delay between you filing a full response and the Patent Office responding to it. This would arise if you met all my objections but your application had not or had only recently been published. I could not report the outcome of my re-examination until I was satisfied that the search was complete for documents published before the priority date of your invention and that anybody interested in the application has had three months following publication of the application to make observations on the patentability of your invention.
- (d) Provided that the requirements of the Act have been met, I can send your application to grant as early as three months after publication. Before doing so I will bring the original search up to date and raise with you any further objection that might result from this top-up search. However, there is a possibility that at that time I may not have access to all the patent applications published after the priority date of your invention and of possible relevance to your application. If this is the case I would have to complete the search after grant and if necessary raise any new found novelty objection then.



Application No: GB 0222410.3
Claims searched: 1-28

Examiner: Steven Davies
Date of search: 7 February 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A,E		EP 1261181 A2 (AT&T)
A		WO 01/47167 A1 (NOKIA)
A		IEEE Signal Processing Letters, Nov. 2001, IEEE, USA pages 285-288, Larsson, E.G. et al, "Preamble design for multiple-antenna OFDM-based WLANs with null subcarriers".
A		IEICE Transactions on Communications, JP, vol.E84-B,no.4, April 2001, pages 967-974, Jeon, W.G. et al, "An efficient channel estimation technique for OFDM systems with transmitter diversity".
A		SPAWC '01, Taiwan, March 2001, pages 82-85, Tung, T.-L. et al, "Channel estimation and adaptive power allocation for performance and capacity improvement of multiple-antenna OFDM systems".
A		GLOBECOM'00, San Francisco, CA, Nov. 27 - Dec.1, 2000, IEEE, US, vol.3, pages 1478-1482, Li, Y., "Optimum training sequences for OFDM systems with multiple transmit antennas".

Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^V:

Worldwide search of patent documents classified in the following areas of the IPC⁷:

H04L

The following online and other databases have been used in the preparation of this search report :

WPI, EPODOC, JAPIO, INSPEC



INVESTOR IN PEOPLE

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Page 1/1

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Support for claims

1. From the first full paragraph on page 13 of the description, it appears to be an aim of the present invention to provide a training sequence whose length varies linearly with the number of transmit antennae used, and this is brought out in claims 1, 12 and 23. However the main characterising feature of claims 13 and 19 is expressed by the equation introduced in the final paragraph of page 14, and the final paragraph on page 19 appears to indicate that the linear variation property will only hold for this equation in the case where $K \geq ML$. Claims 13 and 19 should therefore be amended to include this condition, both to satisfy the aims of the invention and in order that the invention defined therein is clearly distinguished from prior art arrangements such as those discussed in the Tung document.

2. Similar amendments should also be made to claims 2 and 25.